REMARKS

This Amendment is prepared in response to the Final Office action mailed on 16 December 2008 (Paper No.20081215).

Claims 5 and 27 have been amended by this Amendment after Final without adding or deleting any limitation from claims 5 and 27.

Listing of The Claims

Pursuant to 37 CFR §121(c), the claim listing, including the text of the claims, will serve to replace all prior versions of the claims, in the application.

Status of The Claims

Claims 1, 4-15, 19-27 and 31-37 are pending in the application.

Amendment of The Claims

Claim 5 and 27 are amended to augment the clarify of the definitions. The amendment of claim 27 defines the first surface of insulating plate 43 and the second surface of cap plate 41 as shown in FIG. 10. No new limitation is added into or deleted from claim 27. Entry of the amendment is therefore respectfully requested. Moreover, no further search is necessitated and no additional consideration is triggered by this amendment. Its entry is in conformance with 37 §CFR 1.116(b), and with §706.07 of the MPEP 8th Edition, Revision 6 (September 2007).

Drawing

The drawing are accepted by the Examiner.

Issues Raised by Paper No. 20081215

Claim Rejections - 35 U.S.C. §103(a)

I. Claims 1 and 8 are rejected 35 U.S.C. §103(a) as being rendered obvious, and unpatentable over Osamu *et al.* (JP 2000-208130) in vew of newly cited Kono *et al.* (JP 2001-273884).

The Examiner rejected the Applicant's claim 1 by asserting that one skilled in the art may modify Osamu '130 by Kono '884 to achieve the Applicant's claims 1 and 8. The Applicant disagrees with the Examiner's assertion for the following reasons.

Firstly, in the original specification, the Applicant initially describes an desirable condition of a secondary battery where the welding point of the second electrode tab 23 does not interfere with the electrolytic solution inlet. In paragraph [0026], the Applicant states that "the positive electrode tab 13 of the electrode unit 11 that is not connected to the terminal pin 17, is welded to the bottom surface of the cap plate 16, generally to a position between the terminal pin 17 and the electrolytic solution inlet 18". In paragraph [0028], the Applicant states that "since the positive electrode tab 13 is welded to a position between the terminal pin 17 and the electrolytic solution inlet 18, a space margin is insufficient at the welding position of the positive electrode tab 13". As defined by the Applicant's claim 1, "a first opening of the electrolytic solution inlet" is disposed "on a first surface of the cap plate"

and "a second opening of the electrolytic solution inlet" is disposed on a second surface." The Applicant's electrolytic solution inlet is disposed on only a part of the cap plate. In other words, the Applicant's first and second openings of electrolytic solution inlet 35 disposed on the Applicant's cap plate 31 is necessarily significantly smaller than the area of the Applicant's cap plate 31, and the electrolytic solution inlet interferes with neither terminal pin 17 nor the positive electrode tab 13 under an ideal condition, because of the Applicant's structure defined in claim 1 as "a first opening of the electrolytic solution inlet on a first surface of the cap plate" and "a second opening of the electrolytic solution inlet on a second surface."

The Applicant then identifies a problem attributable to the location where the welding point of the second electrode tab 23 overlaps with the electrolytic solution inlet and this problem reduces the efficiency of the injection of an electrolytic solution into the secondary battery. In paragraph [0006], the Applicant states that "it is an object of the present invention to provide a secondary battery which can promote injection of an electrolytic solution even if there is interference between an electrode tab and an electrolytic solution inlet." The Applicant's invention compensates for the disadvantageous interference between the welding point of the electrode tab 23 and the electrolytic solution inlet 36, by increasing the area of the second opening of the injection inlet disposed on the second surface of the cap plate where the second surface of the cap plate faces to the electrode unit. This is described in claim 1 as "the first area being smaller than the second area." As shown in FIG. 2, the enlarged second opening of the injection inlet should be located apart from the terminal pin

and may not interference with the first electrode tab and terminal pin.

As the Examiner has stated in the sentence bridging page 6 and page 7 of Paper No. 20081215, that Osamu' 130 teaches merely a structure of a contemporary battery as discussed in the applicant's background section and Osamu' 130 is silent about the applicant's novel electrolytic solution inlet having the area of one opening disposed on one surface of the cap plate that is different from the area of another opening disposed on another surface of the cap plate, and is silent about the Applicant's novel injection hole which has a sloping cross section.

The Examiner further cited Kono '884 and asserted that Kono '884's inclined parts 31 and 32 may be interpreted as the Applicant's sloping cross-section. The following views are the drawing 3 cited from Kono '884, FIG. 2 and FIG. 5 cited from the Applicant's invention. Kono '884's drawing 3 shows the novel inclined parts 31 and 32 which climb from package 37 towards the pouring-in and exhaust port 9; and the Applicant's FIG. 2 shows the relative position of the injection inlet 35 respective with the cap plate 31, and FIG. 5 shows a sloped shape for injection inlet 35. The Applicant in the following discussion will explain why Kono '884's inclined parts 31 and 32 may NOT be read as the Applicant's injection inlet 35.

Kono '884 – FIG. 3, 2 and 5

[Drawing 3]

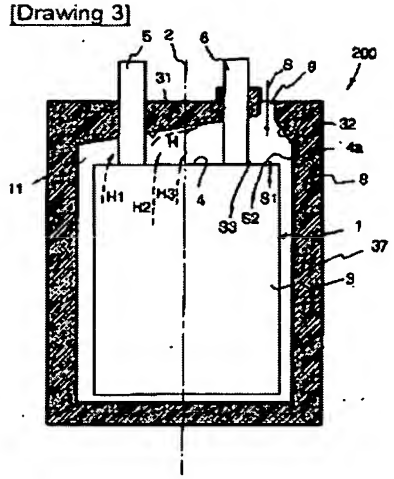


FIG. 2

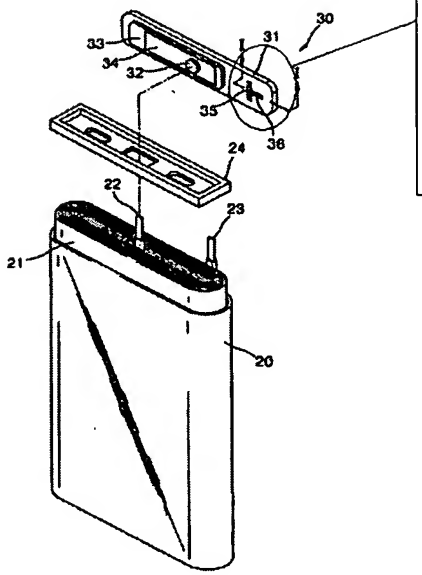
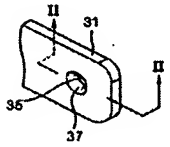


FIG. 5



The Applicant submits that, as shown in Kono '884's drawing 3, Kono '884 introduces inclined parts 31 and 32 in order to guide the gas which is pushed by the injected electrolysis solution and is exhausted to the exterior of the battery via the pouring-in and exhaust port 9, by gradually narrowing the thickness of wall 10 from the package 38 towards the pouring-in and exhaust port 9. (See paragraphs [0024] and [0027] of Keno '884) Since the exhausted gas starts exiting the battery from a location opposite to the location where the electrolysis solution is injected into the battery, relative to the axis 2, the inclined part 31 is formed in a slop shape climbing from package 37 towards the pouring-in and exhaust port 9. In other words, the thickness of the wall 10 decreases from the package 37 to the pouring-in and exhaust port 9. The Applicant's claim 1 defines this structure as Such structure effectively guides the exhausted gas along path H in accordance with the inclined slop of the inclined part 31 and thus effectively leads the exhausted gas to exit the battery though the pouring-in and exhaust port 9. (See paragraph [0028]of Keno '884) Therefore, it is clearly shown on the drawings and the specification that Kono '884's inclined part 31 starts from the package 37 and climbs towards the pouring-in and exhaust port 9. In other words, the inclined parts 31 and 32 interferes with both of positive terminal 5 and negative terminal 6, and the inclined parts 31 and 32 are separated from, and NOT a part of, the pouring-in and exhaust port 9. In fact, Kono '884 nowhere teaches any specific shape of the pouring-in and exhaust port 9 defined by the Applicant's claim 1 as "a first area of a first opening of the electrolytic solution inlet on a first surface of the cap plate being different from a second area of a second opening of the electrolytic solution inlet on a second surface of the cap plate, the

first surface of the cap plate and the second surface of the cap plate opposite to and being spaced apart from the electrode unit, with the first surface facing to an exterior of the secondary battery and the second surface facing to the electrode unit, and with the first area being smaller than the second area" and defined by the Applicant's claim 8 as "the electrolytic solution inlet has a sloping cross-section." Kono '884 shows merely a cylindrical through hole 9 in drawings 1, 3, 6 and 7, which has been discussed as related art in the background section of the Applicant's invention.

As discussed above, because of the Applicant's claim 1's features of "a first area of a first opening of the electrolytic solution inlet on a first surface of the cap plate being different from a second area of a second opening of the electrolytic solution inlet on a second surface of the cap plate, the first surface of the cap plate and the second surface of the cap plate opposite to and being spaced apart from the electrode unit, with the first surface facing to an exterior of the secondary battery and the second surface facing to the electrode unit, and with the first area being smaller than the second area" and claim 8's features that "the electrolytic solution inlet has a sloping cross-section," the Applicant's injection inlet does not interfere with at least one of the electrode tabs. Therefore, Kono '884's inclined parts 31 and 32 which interfere with both of the electrode terminals 5 and 6 are different from and have nothing to do with the Applicant's injection inlet. Similarly, Kono '884's inclined parts 61 through 64 are as well different from and have nothing to do with the Applicant's injection inlet.

Secondly, the Applicant analyzes the language of the Applicant's claim 1 and compares the Applicant's claim 1 with the Examiner's proposed combination.

The Applicant's claims 1 and 8 define "... a cap plate ... having an electrolytic solution inlet, a first area of **(1)** a first opening of the electrolytic solution inlet on **(2)** a first surface of the cap plate being different from a second area of **(3)** a second opening of the electrolytic solution inlet on **(4)** a second surface of the cap plate, the first surface of the cap plate and the second surface of the cap plate opposite to and being spaced apart from the electrode unit, with the first surface facing to an exterior of the secondary battery and the second surface facing to the electrode unit, and with the first area being smaller than the second area." Therefore, the Applicant's electrolytic solution inlet is related to **four** objects, i.e., (1) the first opening disposed on (2) the first surface of the cap plate, and (3) the second opening disposed on (4) the second surface of the cap plate. This compound structure is not found in the Examiner's combination of Osamu '130 modified according to Kono '884.

MPEP § 2143 states that:

> "To establish a *prima facie* case of obviousness,... ,the prior art reference (or references when combined) must teach or suggest **all** the claim limitations."

As discussed in the first argument, Kono '884's inclined parts 31 and 32 start the slope from the package 37 and end at the pouring-in and exhaust port 9. On page 7 of Paper No.

20081215, the Examiner interprets the Kono '884's inclined part 31 and 32 to read as the Applicant's injection hole 35 with sloping cross-section 37. The Applicant disagrees with the Examiner's interpretation because Kono '884 nowhere mentions or suggests the Applicant's second opening of the electrolytic solution inlet disposed on a second surface of the cap plate. The Examiner has apparently interpreted the combination of Kono '884's pouring-in and exhaust port 9 and Kono '884's inclined parts 31 and 32 as the Applicant's injection hole 35 with sloping cross-section 37. Consequently, the Examiner's interpretation does not teach the Applicant's second surface where the second opening of the electrolytic solution inlet may be disposed, because the inclined parts 31 and 32 start the slop from the package 37 and end the slop at the pouring-in and exhaust port 9. Therefore, the Examiner's interpretation and proposed combination fails to teach the Applicant's injection inlets respectively disposed on two opposite surfaces of the cap plate. Since the proposed combination incorporating Kono '884 does not teach the Applicant's second surface of the cap plate, neither the proposed combination nor Kono '884 possibly teach the Applicant's enlarged second opening because the Applicant's second opening must be disposed on a physical object, e.g., a surface.

The Applicant further analyzes Kono '884's inclined parts 31, 32 and pouring-in and exhaust port 9. If, in the Examiner's proposed combination, Kono '884's inclined parts 31 and 32 are interpreted as the Applicant's second surface of the cap plate, Kono '884's pouring-in and exhaust port 9 may be compared with the Applicant's injection inlet. As shown in FIG.

3, Kono '884's pouring-in and exhaust port 9 has a cylindrical shape with one end communicating with the inclined parts 31 and 32. Apparently, Kono '884's pouring-in and exhaust port 9 is different from the Applicant's injection inlet having two openings with different areas.

Similarly, Kono '884's inclined parts 61 through 64 may not be read as the Applicant's injection inlet having two openings respectively disposed on two opposite surfaces of the cap plate.

Therefore, in its broadest interpretation, the Examiner's proposed combination including Kono '844 does not teach the Applicant's injection inlet having two openings respectively disposed on two opposite surfaces of the cap plate and the two openings having different areas.

Thirdly, the Applicant's injection of an electrolytic solution is performed in a state where the interior of the can is evacuated. In other words, the Applicant's electrolytic solution is injected into a vacuumed can via the injection inlet and No gas would be pulled by the injected electrolytic solution and No gas would be exhausted to the exterior of the battery via the injection inlet, during the injection of the electrolytic solution.

The Examiner's primary reference Osamu '130, in FIG. 2, merely teaches a injection hole 14 and does not mention or suggest that gas is pushed by the injected solution and is

exhausted via the injection hole. It means that Osamu '130 may or may not inject the electrolytic solution into the battery can having a vacuum state. When Osamu '130 injects the electrolytic solution into the battery can having a vacuum state, there is no motivation for one skilled in the art to modify Osamu '130 by Kono '884's inclined parts 31 and 32 in order to more effectively guide the gas to exit the battery via the pouring-in and exhaust port 9.

In other words, only when Osamu '130 injects the electrolytic solution into the battery can not having a vacuum state, there might be a motivation for one skilled in the art to modify Osamu '130 by Kono '884's inclined parts 31 and 32 in order to more effectively guide the gas to exit the battery via the pouring-in and exhaust port 9.

Since Osamu '130 nowhere mentions or suggests that the electrolytic solution is injected into the battery can not having a vacuum state, the Examiner is requested to provide evidence to prove that Osamu '130 injects the electrolytic solution into the battery can NOT having a vacuum state with the knowledge generally available to one of ordinary skill in the art at the Applicant's invention was made.

MPEP § 2143 states that:

> "To establish a prima facie case of obviousness, ..., there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of

ordinary skill in the art, to modify the reference or to combine reference teachings."

Therefore, failure of proving that Osamu '130 injects the electrolytic solution into the battery NOT having a vacuum state may result a lack of motivation of combination of the references.

In summary, the Examiner's proposed combination fails to teach the Applicant's novel injection inlet having two openings with different areas. The lack of teaching the Applicant's novel injection inlet leads that the Examiner's proposed combination fails to solve the problem of injection of electrolytic solution when the welding point of an electrode tab interferences with the injection inlet.

II. Claims 4 through 6 are rejected under 35 U.S.C. §103(a) as being unpatentable over Osamu *et al.* (JP 2000-208130))in vew of Kono *et al.* (JP 2001-273884) as applied to claims 1 and 8 above, and further in vew of Uba (US 4,421,832).

The Examiner further rejected claims 4 through 6 as being unpatentable over Osamu '130 in view of Kono '884, and further in view of Uba '832 by asserting that Uba '832 teaches the applicant's channel 36.

The applicant respectfully disagrees with the Examiner's assertion, because Uba '832's channels 36 are radially arranged in the neighborhood of central located channel 40 instead of in the neighborhood of central vent opening 42. As shown in FIGS. 1 and 2, Uba '832's channels 36 are connected to central located channel 40 at the bottom of the cell. In

other words, Uba '832's channels 36 is not connected to the cental vent opening 42 which is the inlet of the electrolytic solution. In fact, Uba '862's channels 36 are disposed to provide passageways for electrolyte distribution during filling the electrolyte and redistribute any electrolyte which is expelled from the cell pack during overcharge or other abusive use. (See lines 61 through 64 in paragraph 3) Therefore, Uba '862's channels 36 have nothing to do with the Applicants' channel 36 which compensates the disadvantageous interference between the welding point of electrode tab 23 and the injection inlet.

Therefore, there is no motivation for one skilled in the art to modify the combination of Osamu '130 and Kono '884 by Uba '832.

The applicant further notes that the Examiner's proposed combination does not contemplate the Applicant's injection inlet having an enlarged second opening disposed on a second surface of the cap plate. Consequently, claims 4 through 6 are not tendered obvious by the Examiner proposed combination.

III. Claim 7 is rejected under 35 U.S.C. §103(a) as being unpatentable over Osamu *et al.* (JP 2000-208130)), Kono *et al.* (JP 2001-273884) and Uba (US 4,421,832) as applied to claims 1, 4-6 and 8 above, and further in view of Planchat (US 4,421,832).

The applicant further notes that the Examiner's proposed combination does not contemplate the Applicant's injection inlet having an enlarged second opening disposed on a second surface of the cap plate. Consequently, claim 7 is not tendered obvious by the Examiner proposed combination.

IV. Claims 12 and 13 are rejected under 35 U.S.C. §103(a) as being unpatentable over Osamu *et al.* (JP 2000-208130)), Kono *et al.* (JP 2001-273884), Uba (US 4,421,832) and Planchat (US 4,421,832) as applied to claims 1, 4-8 above, and further in view of Masumoto *et al.* (WO/2003/003485 refer to English equivalent US 2003/0180582 for cited information).

The applicant further notes that the Examiner's proposed combination does not contemplate the Applicant's injection inlet having an enlarged second opening disposed on a second surface of the cap plate. Consequently, claims 12 and 13 are not tendered obvious by the Examiner proposed combination.

V. Claims 14, 23, 26-27 are rejected under 35 U.S.C. §103(a) as being unpatentable over Osamu *et al.* (JP 2000-208130)), Kono *et al.* (JP 2001-273884), and Masumoto *et al.* (WO/2003/003485), as applied to 1, 4-8 and 12-13 above.

Claims 14 and 27

The Examiner rejected claims 14 and 27 for the same reasons rejecting the Applicants' claim 1. Therefore, the Applicant's arguments against the Examiner's rejection to claim 1 are applied to rebut the Examiner's rejection to claims 14 and 27.

The Applicant amended claim 27 for correction of definitions.

Claims 23 and 26

The applicant further notes that the Examiner's proposed combination does not

contemplate the Applicant's injection inlet having an enlarged second opening disposed on a second surface of the cap plate. Consequently, claims 23 and 26 are not tendered obvious by the Examiner proposed combination.

VI. Claim 15 is rejected under 35 U.S.C. §103(a) as being unpatentable over Osamu *et al.* (JP 2000-208130)), Kono *et al.* (JP 2001-273884), and Masumoto *et al.* (WO/2003/003485) as applied to claims 1, 4-8, 12-13, 14, 23, 26-27 and 35 above, and further in view of Yamahira *et al.* (US 2002/0012829).

The applicant further notes that the Examiner's proposed combination does not contemplate the Applicant's injection inlet having an enlarged second opening disposed on a second surface of the cap plate. Consequently, claim 15 is not tendered obvious by the Examiner proposed combination.

VII. Claims 19-21 and 31-33 are rejected under 35 U.S.C. §103(a) as being unpatentable over Osamu *et al.* (JP 2000-208130)), Kono *et al.* (JP 2001-273884), Masumoto *et al.* (WO/2003/003485)and Yamahira *et al.* (US 2002/0012829) as applied to claims 1, 4-8, 12-13, 14, 23, 26-27 and 35 above, and further in view of Uba *et al.* (US 4,421,832).

The applicant further notes that the Examiner's proposed combination does not contemplate the Applicant's injection inlet having an enlarged second opening disposed on a second surface of the cap plate. Consequently, claims 19-21 and 31-33 are not tendered obvious by the Examiner proposed combination.

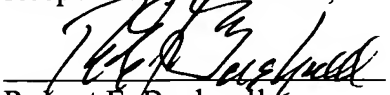
VIII. Claims 22 and 34 are rejected under 35 U.S.C. §103(a) as being unpatentable over Osamu *et al.* (JP 2000-208130)), Kono *et al.* (JP 2001-273884), Masumoto *et al.* (WO/2003/003485), Yamahira *et al.* (US 2002/0012829) and Uba *et al.* (US 4,421,832) as applied to claims 1, 4-8, 12-13, 14-15,19-21, 23, 26-27, 31-33 and 35 above, and further in view of Planchat (US 4,735,630).

The applicant further notes that the Examiner's proposed combination does not contemplate the Applicant's injection inlet having an enlarged second opening disposed on a second surface of the cap plate. Consequently, claims 22 and 34 are not tendered obvious by the Examiner proposed combination.

In view of the foregoing amendments and remarks, all claims are deemed to be allowable and this application is believed to be in condition to be passed to issue. If there are any questions, the examiner is asked to contact the applicant's attorney.

No fee is incurred by this Amendment.

Respectfully submitted,



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